FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

23 to 29 March, 2014 (Week 13)

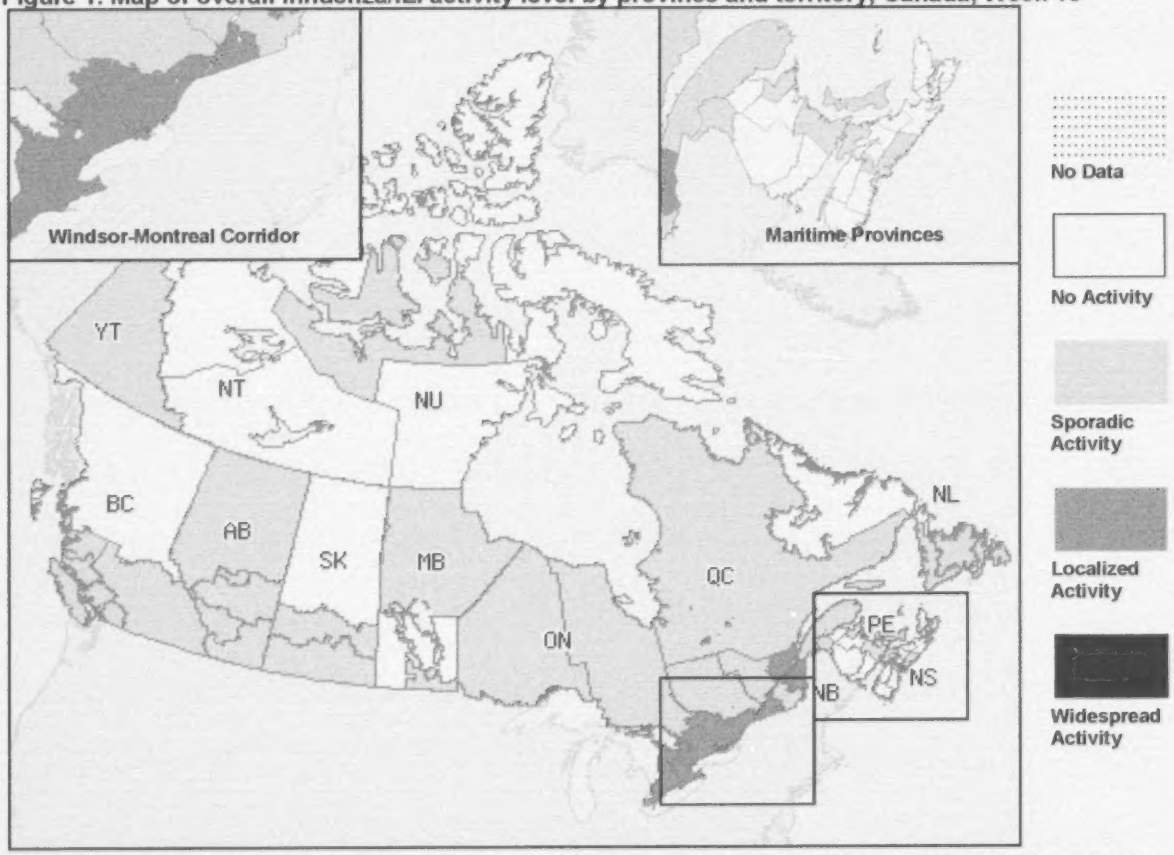
Overall Summary

- In week 13, the decline in influenza activity in Canada has been slowed by continued circulation of influenza B. Overall, the influenza A(H1N1) virus remains the most common influenza virus this season, however, most influenza viruses circulating in recent weeks have been influenza B.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age this season, influenza B is having a greater impact on adults 65 years of age and older, as well as young persons 5 to 19 years of age.
- As of week 13, 3,856 hospitalizations and 215 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.
- Influenza activity remains within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

The number of regions reporting localized or widespread influenza activity has been stable in recent weeks, with the majority of activity reported in Eastern Canada. In week 13, no regions reported widespread activity and eight regions (ON(5) and QC(3)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 13

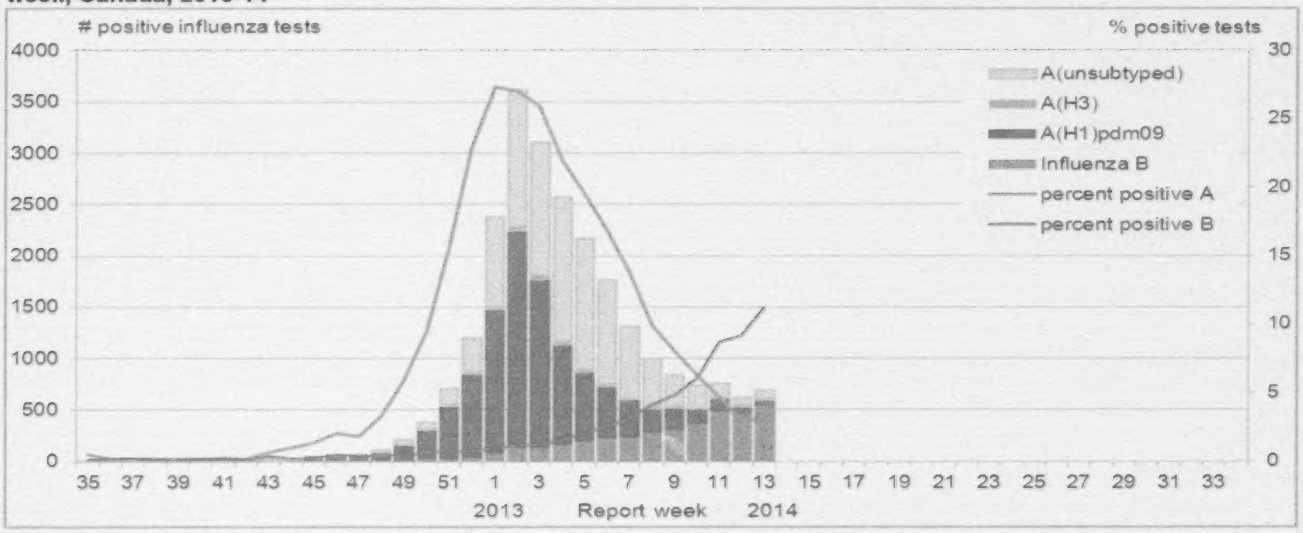


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests increased from 608 in week 12 to 692 (14.2% of tests) in week 13. Influenza B remained the predominant virus in week 13, representing 79% of influenza detections (Figure 2). The highest proportions of influenza B this season have been reported from Newfoundland & Labrador (33.0%) and Quebec (27.7%), followed by Ontario (17.0%) and British Columbia (10.2%) (Table 1). Slightly more influenza B has been observed to date this season compared to the same time during the 2012-13 season. Among the 19,992 cases for which information on age and type/subtype has been received this season, 54.1% were 20-64 years of age (Table 2). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. Influenza detections among persons ≥65 years of age increased in weeks 11 and 12 but decreased in week 13; while detections in other age-groups continue to decline.

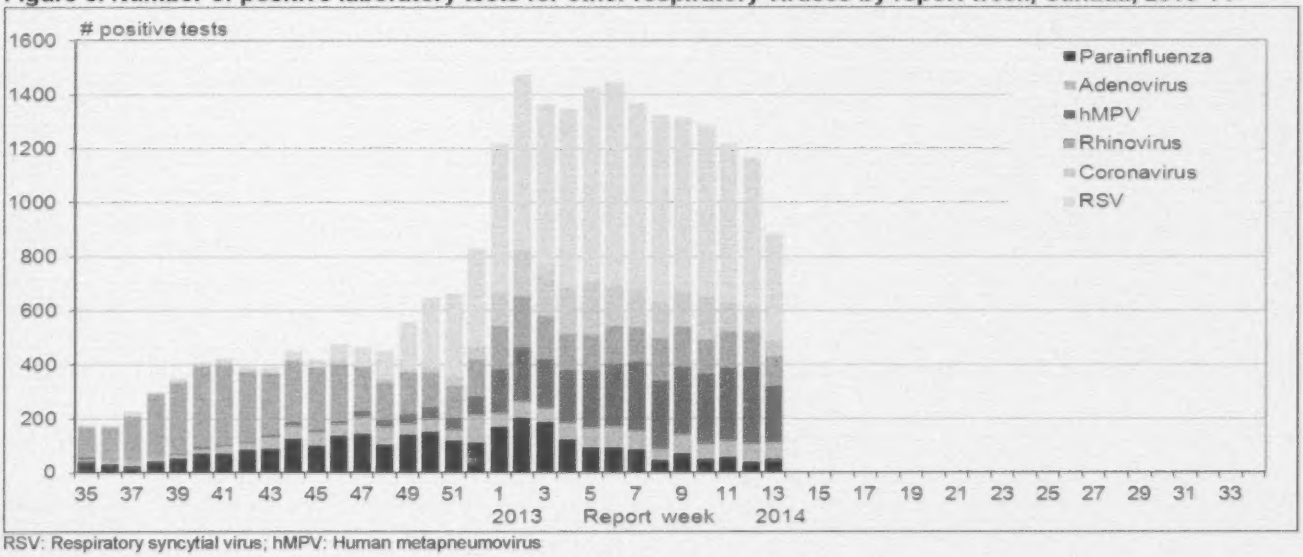
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV has been declining gradually over recent weeks, similar to the trend observed in recent seasons. The number of positive tests for parainfluenza and coronavirus continued to follow a downward trend since early February. More detections of adenovirus have been reported compared to last season, and have been relatively stable in recent weeks. Detections of rhinovirus have been relatively stable during the winter months, although these detections represent an increasing percentage of tests positive since early January. The number of positive tests for human metapneumovirus has been higher than during the same period last season; it declined in week 13 (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (March 23 to 29, 2014)					Cumulative (August 25, 2013 to March 29, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	32	12	5	15	26	1794	1613	49	132	203
AB	28	14	0	14	19	3792	3420	57	315	195
SK	5	2	0	3	4	1355	975	6	374	53
MB	11	3	1	7	2	641	454	2	185	19
ON	41	13	17	11	265	5580	2462	293	2825	1145
QC	22	1	0	21	196	5288	676	3	4609	2030
NB	0	0	0	0	8	1488	370	1	1117	38
NS	3	0	0	3	0	167	134	4	29	4
PE	–	–	–	–	–	118	117	0	1	1
NL	7	0	0	7	23	353	104	0	249	174
Canada	**149**	**45**	**23**	**81**	**543**	**20576**	**10325**	**415**	**9836**	**3862**
Percentage[2]	21.5%	30.2%	15.4%	54.4%	78.5%	84.2%	50.2%	2.0%	47.8%	15.8%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

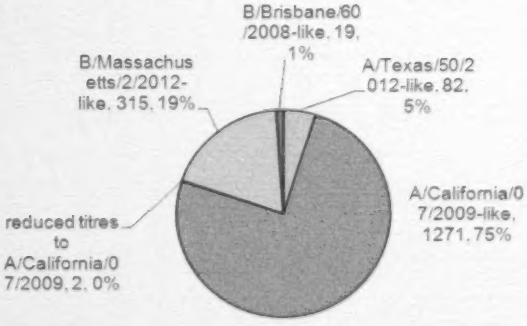
Age groups (years)	Weekly (March 23 to 29, 2014)					Cumulative (August 25, 2013 to March 29, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	11	2	1	8	24	3219	1436	34	1749	348	3567	17.8%
5-19	5	1	0	4	34	1305	701	18	586	529	1834	9.2%
20-44	13	4	0	9	31	5027	2783	39	2205	577	5604	28.0%
45-64	15	5	2	8	74	4400	2375	53	1972	816	5216	26.1%
65+	16	4	2	10	117	2453	987	115	1351	1182	3635	18.2%
Unknown	1	0	1	0	0	133	102	19	12	3	136	0.7%
Total	61	16	6	39	280	16537	8384	278	7875	3455	19992	100.0%
Percentage[2]	17.9%	26.2%	9.8%	63.9%	82.1%	82.7%	50.7%	1.7%	47.6%	17.3%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1,689 influenza viruses [82 A(H3N2), 1273 A(H1N1)pdm09 and 334 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Nineteen influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1,689



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1,290 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 1,290 viruses tested for resistance to zanamivir were sensitive. All 1,378 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

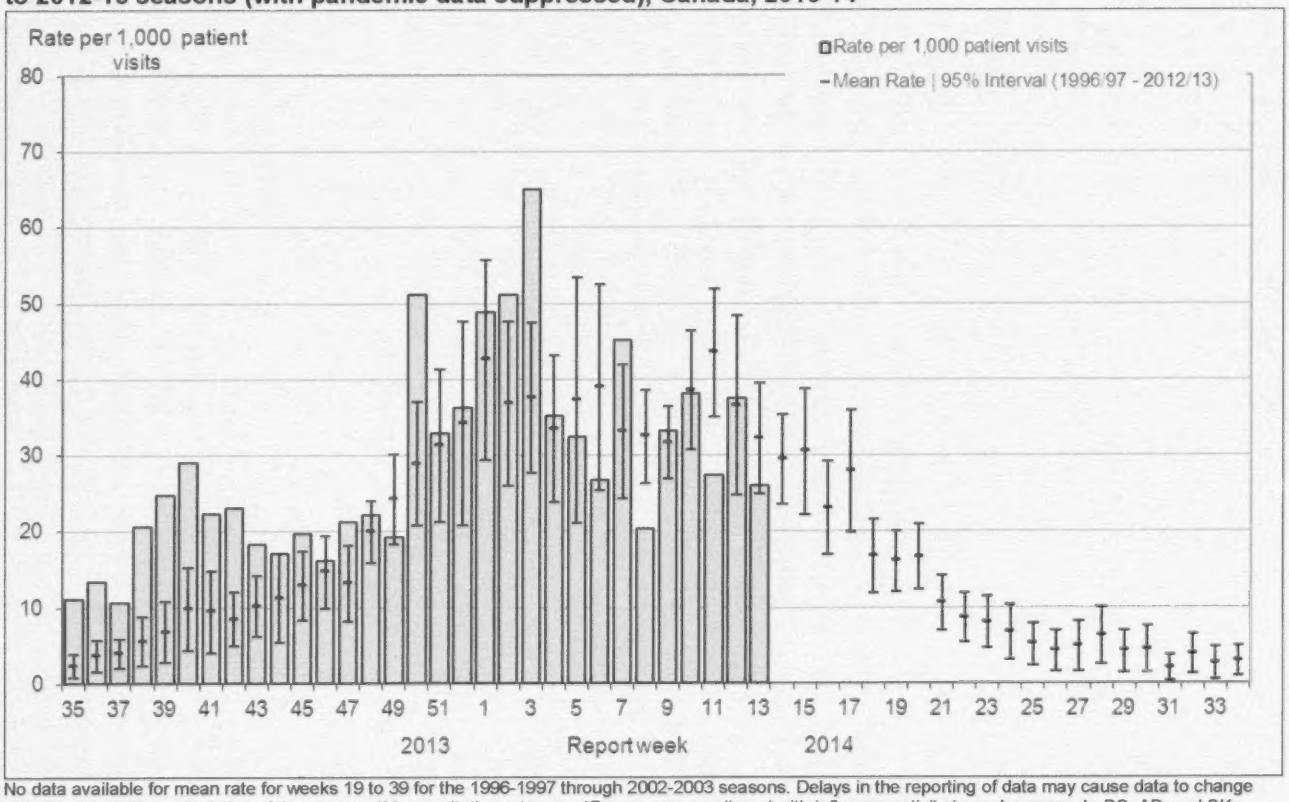
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	66	0	66	0	103	103 (100%)
A (H1N1)	1046	2 (0.2%)	1047	0	1275	1275 (100%)
B	178	0	177	0	NA[1]	NA[1]
TOTAL	1290	2 (0.2%)	1290	0	1378	1378 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 37.5/1,000 in week 12 to 25.9/1,000 in week 13; which was within the expected range for week 13 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

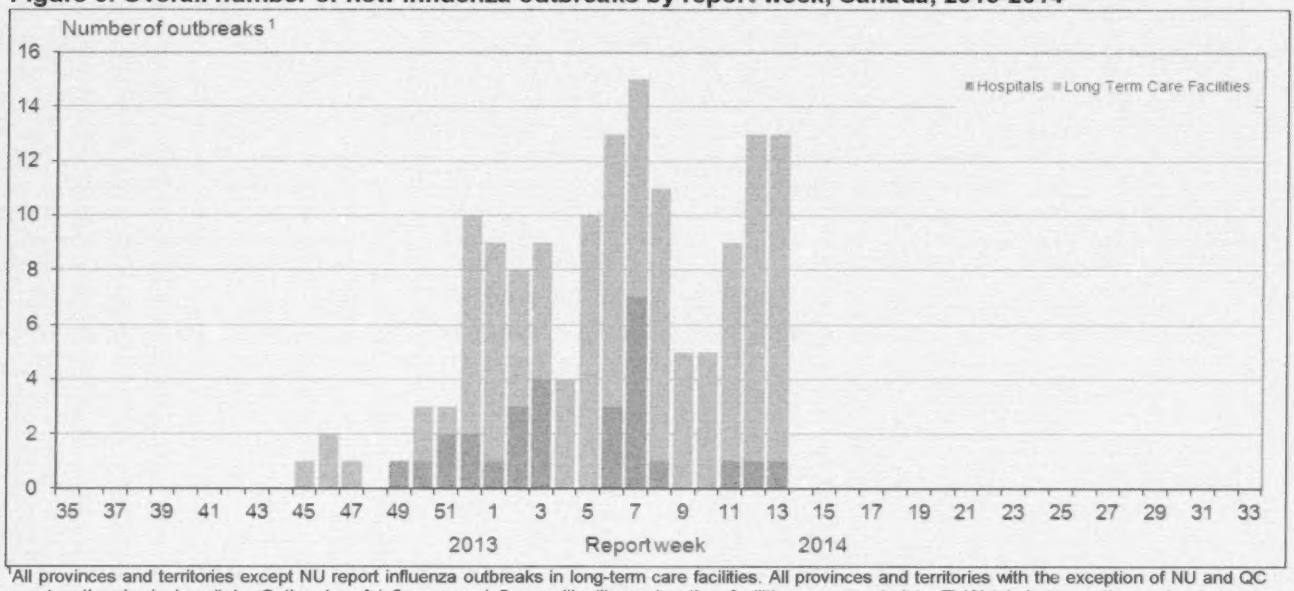


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 13, thirteen new influenza outbreaks were reported. Twelve outbreaks were in long-term care facilities, and among the 11 with available data, all were influenza B. One outbreak of A(H1N1)pdm09 was reported in a hospital (Figure 6). In addition, one outbreak of influenza-like illness was reported in a school.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

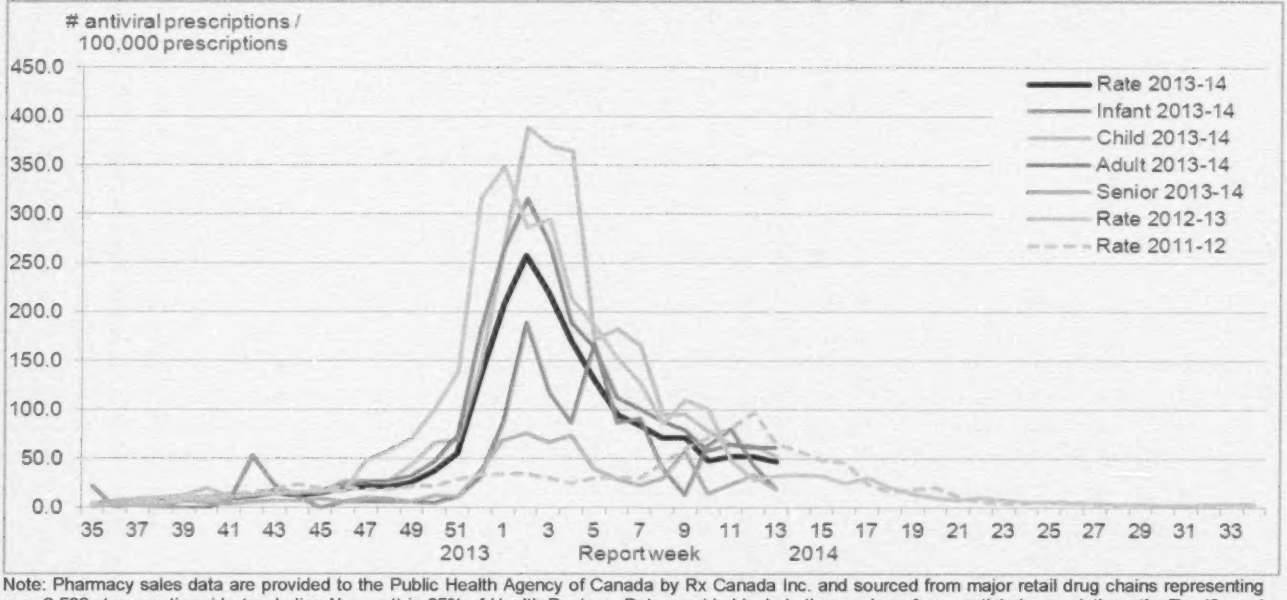


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 13, the proportion of prescriptions for antivirals among adults 19-64 years of age was similar to recent weeks, but declined for other age-groups. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age, in keeping with laboratory detections of influenza (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 13, 15 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 13 in week 12. Influenza B was reported in 11 of the 15 cases in week 13 (Figure 8a). Although the number of cases is small, a greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. No ICU admissions or deaths were reported in week 13.

To date this season, a total of 642 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 86% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Ninety-three ICU admissions have been reported, of which 63 (68%) were children <5 years of age (Figure 9a). All but six were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 90 ICU cases with available data, 58 (64%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 13, 25 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 27 in week 12 (Figure 8b). This season, a significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09. For a fourth week in a row, the majority of hospitalizations were associated with influenza B, which was associated with a greater proportion of cases among adults ≥65 years of age. No ICU admissions or deaths were reported in week 13.

To date this season, 1403 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1182 (84.2%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 227 hospitalizations, all but 12 of which were cases with influenza A (119 A(H1N1)pdm09, seven A(H3N2) and 89 A(unsubtyped)). Approximately 80% of hospitalizations and ICU admissions were ≥45 years of age. Of the 176 ICU admissions with available information, 154 (87.5%) were reported to have at least one comorbidity and of the 193 ICU admissions with available information 138 (71.5%) reported not having been vaccinated this season. Sixty-five deaths have been reported, all but six with influenza A (34 A(H1N1)pdm09, three A(H3N2) and 22 A(unsubtyped)); seven cases 20-44 years of age, 27 cases 45-64 years of age and 31 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

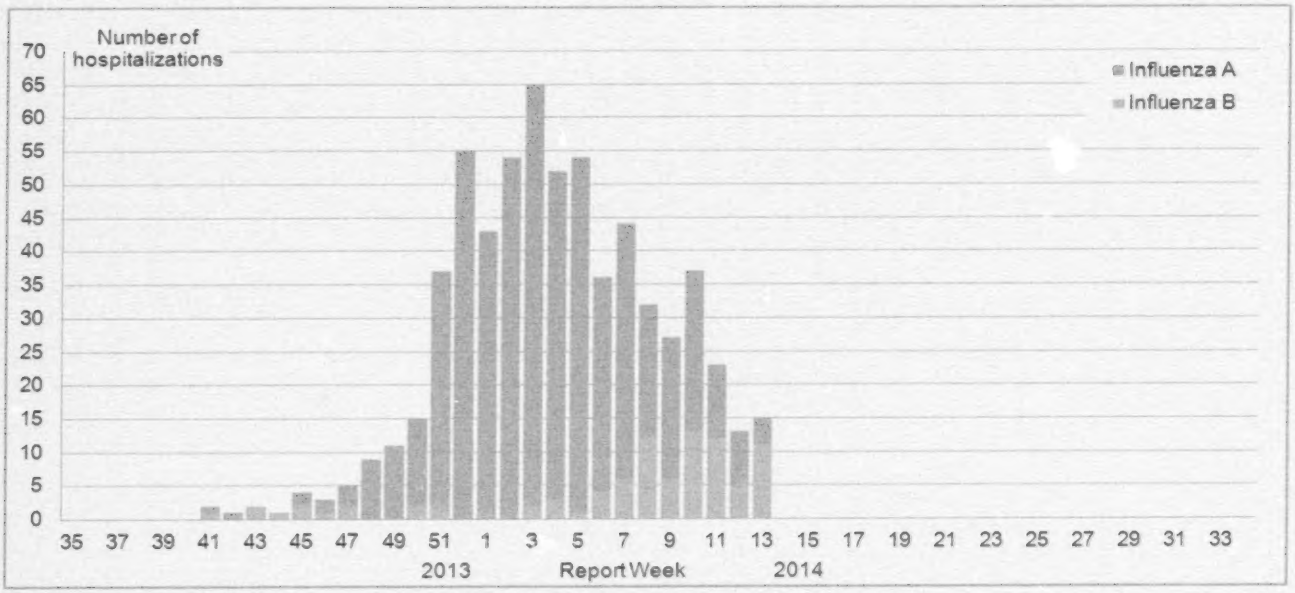
Age groups	Cumulative (25 Aug. 2013 to 29 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	104	33	0	71	4	108 (17%)
6-23m	160	46	1	113	14	174 (27%)
2-4y	163	55	3	105	27	190 (30%)
5-9y	83	27	0	56	37	120 (19%)
10-16y	41	15	1	25	9	50 (8%)
Total	551	176	5	370	91	642
% [1]	85.8%	31.9%	0.9%	67.2%	14.2%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

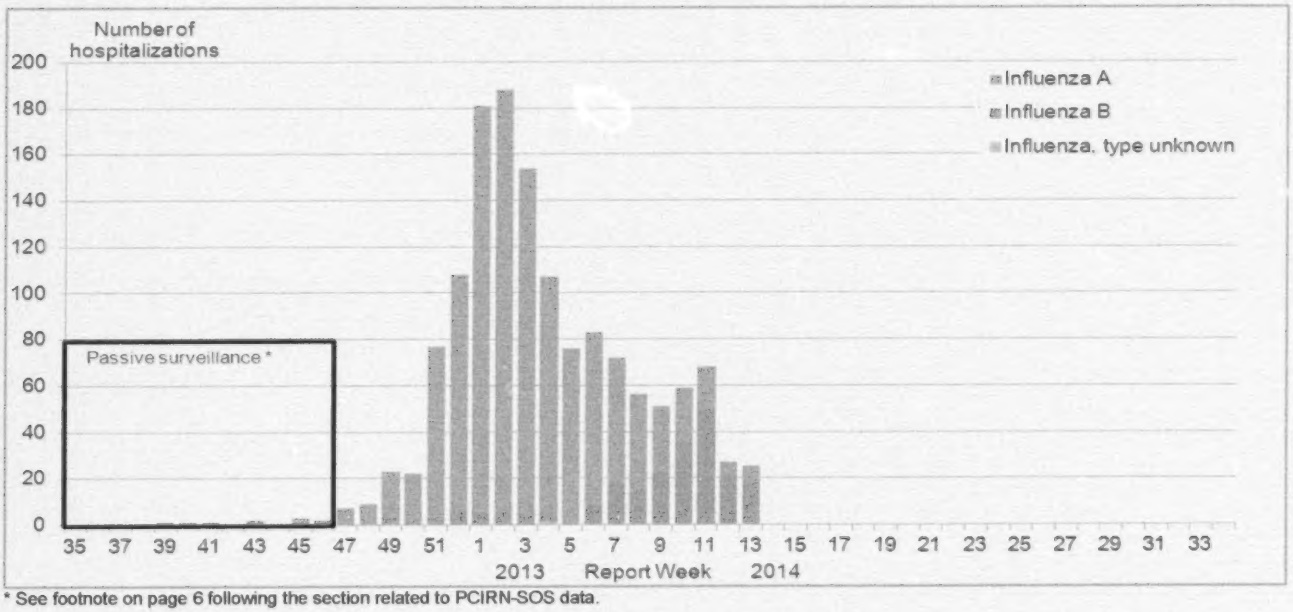
Age groups (years)	Cumulative (25 Aug. 2013 to 29 Mar. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	4	0	9	2	15 (1%)
20-44	249	131	5	113	14	263 (19%)
45-64	465	217	7	241	55	520 (37%)
65+	450	211	38	201	149	599 (43%)
Total	1177	563	50	564	220	1397
% [1]	84%	48%	4%	48%	16%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * One case for which the influenza type has not yet been reported, and five cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



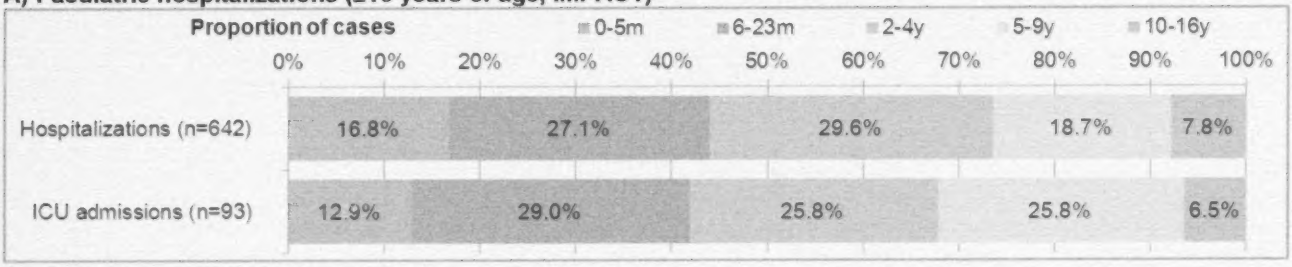
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



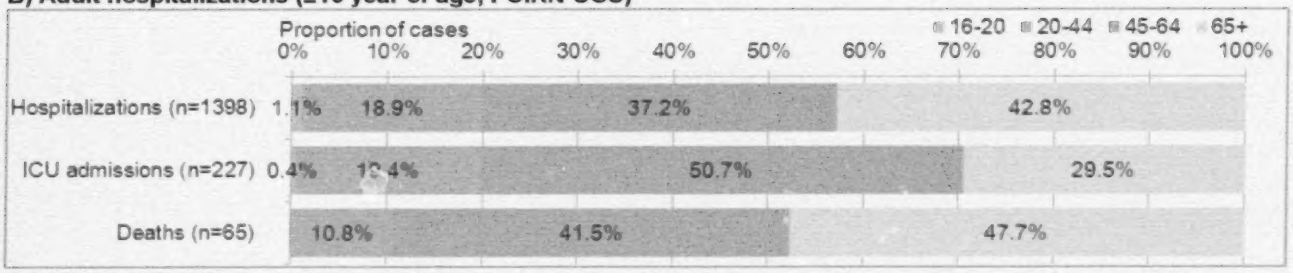
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 13, 147 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in week 13, the majority were cases of influenza B (104, 70.7%). Four ICU admissions were reported in week 13; one adult 20-44 years of age and the other three with age not reported; all with influenza A. Twelve deaths were reported in week 13; of which 11 were ≥65 years of age, and nine of the twelve had influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 3,856 influenza-associated hospitalizations have been reported, 89.0% with influenza A. The majority (58.1%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 333 ICU admissions have been reported this season, of which 66.6% were adults 20-64 years of age. A total of 215 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (46.9%), followed by adults ≥65 years of age (44.2%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 11.0% of hospitalizations and 10.7 % of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 29 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	588	280	7	301	59	647 (17%)
5-14	129	64	5	60	55	184 (5%)
15-19	35	20	3	12	2	37 (1%)
20-44	590	413	4	173	26	616 (16%)
45-64	1081	686	25	370	80	1161 (30%)
65+	881	456	72	353	198	1079 (28%)
Unknown	127	97	3	27	5	132 (3%)
Total	3431	2016	119	1296	425	3856
Percentage[1]	89.0%	58.8%	3.5%	37.8%	11.0%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Six new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to April 3, 2014, the WHO has been informed of a total of 406 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 121 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

No new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 206 laboratory-confirmed cases of infection with MERS-CoV, including 86 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.